DOCUMENT RESUME

ED 446 268 CE 080 886

AUTHOR	Younis, Talib
TITLE	Higher Education: Looking towards the 21st Century.
PUB DATE	2000-04-08
NOTE	17p.; In: TEND 2000: Proceedings of the Technological Education and National Development Conference, "Crossroads of the New Millennium" (2nd, April 8-10, 2000, Abu Dhabi, United Arab Emirates); see CE 080 883.
PUB TYPE	Opinion Papers (120) -- Speeches/Meeting Papers (150)
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	Access to Education; *Adult Learning; Corporate Education; Corporations; *Delivery Systems; Distance Education; *Education Work Relationship; Educational Administration; Educational Improvement; Educational Objectives; *Educational Policy; *Educational Technology; *Educational Trends; Employment Patterns; Flexible Progression; Foreign Countries; Futures (of Society); Government School Relationship; Higher Education; Open Education; Policy Formation; Position Papers; Prior Learning; Public Policy; Rural Areas; Rural Education; Trend Analysis; Universities
IDENTIFIERS	Australia; Scotland; *United Kingdom; United States; Virtual Universities

ABSTRACT

Trends in higher education (HE) in Scotland and elsewhere in the United Kingdom in the 1990s were reviewed, and possible policy directions for HE in the 21st century were explored. Special attention was paid to the following areas: features of HE institutions in the 21st century; the relationship between the state and HE institutions; curriculum development in support of learning for the workplace; flexible, open, and distance learning; technology and learning; the corporate university; and virtual education. The following were among the main conclusions reached: (1) HE policymakers and managers must base their policy decisions on forecasts of the skills needed in the workplace; (2) education providers must aim to bring equality of access to learning and encourage the state to fund installation of the infrastructure and new technologies needed to extend education to wider communities; and (3) policymakers and mangers wanting to provide their communities with wide, affordable access to learning must look to new technologies with the potential for mass education, including virtual universities based on the creation of partnerships offering courses and learning materials that have been developed by other institutions and subsequently awarding their own credits/degrees by assessing students' prior learning of the materials. (Contains 20 references.) (MN)

Reproductions supplied by EDRS are the best that can be made
from the original document.

ED 446 268

TEND 2000

Crossroads of the New Millennium

Higher Education: Looking Towards the 21st Century

Prepared and Presented

By

Dr. Talib Younis

Reader in Public Management

Department of Law and Public Administration

Glasgow Caledonian University

email : TalYyounis@compuserve.com

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
This document has been reproduced as received from the person or organization originating it.
Minor changes have been made to improve reproduction quality.
Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Saturday 8 April, 2000

Seminar

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY
A. Billingsley
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

BEST COPY AVAILABLE

Abstract

Possible directions higher education (HE) may take in developing countries in the year 2000 and beyond are discussed. Aspects emphasised include the desired practical working knowledge of graduates and the flexible management of institutions. Responsibilities of states will be to establish collaborative programmes and links, considerable IT investment and diversity of research. In curriculum development a broad-based first degree is considered in which students would be taught communication skills, humanities and at least one language. Specialization would occur at postgraduate stage. Widening access to learning will be achieved through advanced technology. Institutions largely use this to supplement existing teaching. Plans for a new corporate university in Scotland are described. Virtual education is discussed and it is concluded that young students will benefit from personal contact with the lecturer and other students.

"There is nothing permanent except change" as stated by philosopher Heraclitus in 513BC. Change is natural, to be expected and is regarded as a continuous process. History books still promote the belief that technologies shape societies and civilistions. New technologies which come to dominate production and working patterns drive commercial success, and subsequently national economy and wealth. In 1761, Adam Smith, educated in Scotland at Glasgow University, wrote the first major book on economics, "The Wealth of Nations", and describes how economic growth determines the nation's success. Consequently it follows that shifts in commerce determine the best suited knowledge and skills required by the workforce-and the education of the future workforce must equip them with the ability to participate.

Before discussing possible implementations for the year 2000 and beyond it may be useful to review the changing nature of higher education in Scotland and the UK in general, which, during the nineties, underwent dramatic modification. To paint a fuller picture some reference should be made to the events which called for such changes and the scenario which developed as a result of them.

Higher Education: Looking Towards the 21st Century

HIGHER EDUCATION IN SCOTLAND AND THE UK DURING THE NINETIES

During the 1980s, the changing nature of industry and the workforce in the UK was apparent. A shift from the manufacturing to services industry occurred. At the same time, unemployment was high with figures for the EEC showing it going from 2.7% to 10.3% in the 12 years up to 1985-but economists failed to agree on its cause. Continuing success of the manufacturing and exporting enterprises of developing countries was often assumed to be the cause, together with advancing technologies, both having the obvious consequence of reducing labour costs. The electronics industry, with the advent of the microchip, and now computer and word processor, could not be solely responsible because it generated as many jobs as it destroyed. Whatever the cause, it was clear that people no longer had a job for life. They needed the ability to learn as job specifications changed, and as they changed jobs. They had to be adaptable to improve their opportunities and education needed to respond-the message from the UK Government in 1984 was that 'training must be fully work-oriented and lead to jobs' and at the end of the eighties-'that the workforce had to become more skillful'.

Reactions to the perceived lack of skillfulness of the workforce included a change in educational goal from one of 'education for life' to ' vocational training'-the emphasis being on continuous education. The commitment to increased access to higher education meant a greater proportion of the population could participate. The older fashioned polytechnics became 'new' universities and could award their own degrees, and a new council and committee were introduced to deal specifically with higher education in Scotland. The 'new' universities of the nineties had been long established degree and postgraduate institutions and contributed significantly to HE expansion-they made up the public sector of higher education as opposed to the university sector-and were subject to political and academic accountability through their local Authority and validation by their own council CNAA, Council for National Academic Awards. They were responsive to the needs of the local and regional communities and were committed to vocationally oriented programmes, drawing widely from their surrounding localities and encouraged links between communities and business. Additionally when they became universities they each combined the transition with mergers with local smaller colleges so extending their educational activities and curricula, and strengthened their committment to widening access to higher education.

As a consequence of these changes the demand for higher education soared and there was a rapid in expansion numbers during 1990-1995 which saw an increase of 58% in students entering full time higher education.Scotland's higher education institutions were now composed of 13 universites (5 traditional, 8 new) and 8 smaller colleges with 142,000 students in full time education (1). The most obvious benefit was the expansion of young (and mature) people now

qualified to degree level and with it the improved quality of life that would bring, but it imposed considerable strains on the now burgeoning institutions. In the mid-and towards the end of the ninieties the mounting problem to befall Scottish HE and the UK HE in general was financial. With such an unprecedented increase in HE and the government's reluctance to inject further funds, the institutions' most pressing problems were to administer and implement HE with static levels of resources. Additionally, the traditional financial help awarded to students was being threatened. The funding of students in UK had been supported by the state for around 30 years.Their tuition was paid for by the state and, at the same time, they received an index-linked 'maintenance' grant from the state based on the earnings' of their parents. Eventually unsurmountable financial problems in the HE sector led government to appoint the Dearing Committee with instructions specifically to address student support. In their report of summer 1997 they called for the highly controversial abolition of student grants and the introduction of tuition fees. Being implemented in 1998, and now at the time of writing (1999), 50% students pay the maximum fee £1,050 and none receive maintenance.

Despite the changes which occurred in the system over ten years there is still distinctiveness associated with Scottish HE and its long-standing tradition of university training. It has served Scotland well and its value is appreciated among businesses and the community which may account for its particiption rate being 10% above the UK average (2). The problems experienced and which were subsequently overcome, demonstrates that, when the focus of educational goals needs to be sharpened, it can be achieved without threatening the quality of standards delivered.

EDUCATIONAL INSTITUTIONS IN THE 21ST CENTURY

Teaching, learning and research have been, and will always remain, the three major functions of HE institutions : knowledge is disseminated and imparted to students of learning. Research: the search for new knowledge is seen to complement the learning process, and students in their final year should have the opportunity to engage in research projects, as this teaches them how to focus the mind on exploration and analyses. (The broader context of contract research undertaken by university departments is discussed below). Students who complete their courses will leave as graduates, suitably qualified to join the workforce. Future HE courses on offer should be composed of an exciting and flexible range of programmes, the contents updated on a regular basis and wide enough to meet the ever-changing demands of the job market. Employers now need graduates to be adaptable and equipped with broad based skills to meet varying requirements expected of them. Highly specalised knowledge with little practical experience is no longer a realistic qualification. Practical experience is now seen as reinforcing the learning process and a balance between the two produces an employable graduate with both theoretical and working expertise.

The public sector institutions of Scotland, later to become the 'new universities' developed the ethos of 'serving the community'- the industrial liaisons and business links they enjoyed maintained their awareness of the needs, and prospective needs, of employees and employers

alike. Reinforcing these links was the abundance of 'sandwich' courses where students divided their time between studies at the institute and practical work experience in local business. This had the additional advantage of producing graduates who were able to begin employment with a minimum of training.

In the development of more future colleges, HE policy makers would be wise to consider making contacts, establishing such links and include 'sandwich courses' in the curricula they offer. Similar practical experience for students while in HE is the introduction of residential field courses. This provides an opportunity to develop their skills through project-based fieldwork, which can be at home or in a foreign country. Further practical experience comes in the form of exchange systems whereby colleges from two different countries invite groups of undergraduates (usually third or fourth year) on similar courses to participate in each other's country for several weeks. This provides them with a positive and varied outlook on academic and cultural experience and contributes to their personal development. It has been shown that such practical experience help to widen students' horizons, contributes to their academic profile and enhances their career prospects.

Faced with demands for flexibility in educational provision, the Scottish institutions during the nineties were required to be 'responsive' or 'adaptable' and the new universities were seen to have an advantage in their ability to do this. The different styles of management between the new universities (former public sector institutions) compared with the old (traditional) universities could perhaps explain this. Historically the new universities were much more subject to accountability, their collegiate, decentralised management style encouraged consultation throughout the different staff levels and promoted participation. In contrast, organisationally, the closed, hierarchical, centralised system of the traditional universities meant decision making was in the hands of senior management and not subject to open discussion. Therefore, management style was seen to have some bearing on adaptability (3).

Funding levels and methodologies are obviously crucial to the delivery of HE but it is imperative that provision is made for lecturers to maintain quality of content and presentation. They must be alert to changes in their fields by accessing data by IT or specalised journals and update the knowledge they teach accordingly. With such an increase in numbers of courses available, the lecturers must be able to provide educational advice and, additionally, as the increased numbers of students will bring increased domestic or social problems, they must have the personality skills themselves to advise on some matters outwith education. Essentially they must be able to act as mentors to young people, many of whom may have left home for the first time.

THE STATE AND HIGHER EDUCATION INSTITUTIONS:

Collaboration

In the state-funded institutions of the 21st century the main responsibility will be the implementation of HE and, in the broader picture, its pivitol role in determining national economic wealth. The work of teachers in HE should be complemented by the entrepreneurial activities of governing bodies working to encourage links with national businesses. By so doing, confidence and co-operation can be built upon to develop collaborative activities, which is seen to strengthen bonds and introduce fresh ideas to stimulate interest. It is regarded as highly advantageous and inspires confidence in the classroom in those involved in teaching, and receiving knowledge, confident that they will be able to contribute to the working progress of their country. One highly successful programme in South Africa is called Technology and Human Resources for Industry and Research Programme, THIRP. Problems in key areas affecting economic strategy are addressed and the state, industry and HE institutions work together on joint ventures to research and ultimately improve the circumstances. This year £65 million-half from the state and half from industry-was pumped into 450 projects in areas of science, engineering and technology. The largest of these was the 'Deepmine Collaborative Research programme' estimated to last four years at a total cost of about £70 million. The gold mining industry, having exhausted extractable reserves close to the surface required advice and insight in how to mine deeper. 200 researchers from major universities in South Africa are working on projects in nine sites and are looking at the physical problems encountered in deep mining and the stamina of the miners engaged in it (4). Scotland now has its own Enterprise Minister aiming to encourage commercial development by tranforming 'ideas into business'. A task force to specifically address key issues which will promote progress has been set up in Scotland. The Knowledge Economy Taskforce is backed by government funding and set to encourage initiatives, particularly industry-scientific collaboration. Such encouragement from governments will serve to support and strengthen motivation.

IT Investment

The world is witnessing long term drift from the industrial age to the information age. Data can be accumulated, analysed and transferred in seconds, and knowledge itself and its applications are now regarded as valuable assets. Information technology, through the vast array of available hardware and software, requires the building of an efficient telecommunications infrastructure to support it. All education sectors should be equipped with facilities for IT because it is crucial that developing countries recognise that what is now perceived as valuable are not so much the raw materials on which their economies earlier thrived but on knowledge and information. Students must now have access to information, the speed with which technology can derive data from literature searches has cut hours off time-consuming library visits and laborious sifting through journals and texts to cite other work. If state funding allows HE institutions to be equipped with to up to-date technology the students have the wherewithall to perform efficiently and competitively.

Research

Research is the search for new knowledge by careful exploration. It is regarded by some as the highest form of intellectual activity and 'reflects a restless mind' (5), and as the basis of invention and innovation deserves mention. In Scotland, research was associated with traditional universities where it was seen to complement teaching and learning. Now most, if not all, HE institutions are engaged in some form of research although this varies greatly. As well as research projects incorporated into the final year of many student courses, some departments undertake contract research which is funded by Government money via the Research Councils or from the public's donations through the main charities. Two important features affecting research carried out are the amount of monies allocated to research and peer review, the method by which applications are assessed. The two factors are inextricably linked and are determining the quality of research carried out. Static or ever-diminishing funds and the increasing number of grant applications submitted, mean that funds available can be as little as 5% of the potential monies applied for (6). The points of criticism arising are that peers are protected by anonymity and lack of accountablity (7). Also an increase in fraudulent papers, now estimated at 1: 250 (8), is raising concern and the fierce competition is blamed. Most importantly, perhaps, is that the quality of research being carried out is restricted by financial constraints. Demands by the Government mean that only research which has 'commercial potential should be persued' and the peers being under pressure to agree to this end are therefore approving mediocre research which has predictable outcomes, likely to be extension of existing lines of enquiry. Curiosity-driven, original, innovative research is considered risky and no longer acceptable. Industry-funded research also has its limitations as it will carry restrictions set on it by the paymaster (9).

The message to countries developing HE systems is that, in the state-funded institutions of the 21st century, whatever the method of project-assessment, research-funding should strike a balance between that which is seen to lead to commercialisation and creation of wealth by helping the economy, and that which is-within reason-basic, impartial and curiosity-driven and on which, it is true to say, none of today's technologies would have existed without. Consider the double-helix structure of DNA or microprocessors or any important areas of advanced technology. These grew out of what was considered speculative research 20, 30 or 40 years ago (9).

The Australian National University, Canberra has included in its complex a unit comprised of nine schools devoted entirely to basic research and research training (10). In this 'Institute of Advanced Studies' researchers receive block grants to perform research-quite far removed from the competitvely won funds normally associated with UK research. This rather privileged position-without teaching commitment-is enjoyed by 700 academics. Here research is on long term contracts, i.e. 5 years or more, and serves to encourage it as a career for science graduates, particularly for those with an 'innovative, restless mind' who are put to good use.

LEARNING FOR THE WORKPLACE: CURRICULUM DEVELOPMENT

In the past few years, expansion of the industrial environment, global trading, international business links, and cut-throat competitiveness all demand that a diversity of skills are taught to the student. Education must cover a range of training to produce a graduate adaptable, yet able to operate in the workplace from the initiation of his employment.

It is sometimes overlooked that HE is about personal development as well as academic qualification. The requirement for good personal and interpersonal skills is important because, as businessmen point out, from early stages after joining a company, a graduate will need to communicate either in a small group or team presenting information.(11). They must be trained not only in that subject but in their ability to articulate and apply their knowledge in the daily working environment. They must be encouraged to develop their innate personalities, discover their strengths and weaknesses and so develop their confidence.

It has been proposed that a broad based first degree be introduced (11). This would cover a range of subjects intended to expand their native tongue vocabularly and articulation skills. Included in this curriculum would also be some subjects of the non-science, non-technological fields otherwise known as the humanities, examples of which are modern history, classic history, languages, law, music and philosophy. Teachers of these subjects maintain that students learn an awareness of custom, culture, politics and religion of the countries concerned. They develop subject-general skills of arguing from evidence, decision-making and evaluation, and maintain rationality in their debate, all of which are of commercial value (12). Developing countries need to have an awareness of how they stand today in relation to different cultures of the world with which they may interact and the teaching of humanities may facilitate this. The non-material and less tangible qualities of life imparted from such studies also produce citizens who can contribute to the well being of society.

To negotiate business deals and to be comfortable with foreign colleagues, a second language is highly desirable. Britain has not got a good track record in language ability, frequently put in the shade by her European counterparts whose young students (and holiday makers) have conversational skills in English. Britain has now changed its ways and for 6/7 years primary schools have introduced it. However it has to be said that numbers of school leavers with a higher language are low. Although praiseworthy indeed to hear young schoolchildren exchanging dialogue in French, it could be argued that having only one language is restrictive. Operational responsibilities in business now extend further afield than where the standardised French and German are spoken. Superficial knowledge in the tongues of Eastern Europe or Asia would be most useful personal capability and the advised flexibility of a modern day education system should be able to offer basic programmes for working knowledge of several languages.

Included in the personal skills is computer literacy and this was introduced in primary schools in Scotland so that children now understand the complexities of computer software and can master keyboard skills and the applications of different programmes. This training is especially needed due to the expansion in industrial environments, global trade and international business links and competitiveness. It prepares them for the participation in the 'knowledge market" ahead of them. Information technology with its advanced methods of data analyses, management and storage has pervaded all aspects of life and graduates aught to have a basic knowledge in commonly, used applications and therefore computer skills which will be transferrable to their future working environment.

Two more subjects have been proposed in the 'good grounding' general degree. Manufacturing has been a key strength in the majority of countries who have enjoyed economic wealth, yet there is not general agreement that this is a critical profession and industry, often being included in other courses, e.g. mechanical engineering (11). Also suggested is the fundamentals in Business training included to explain the basic understanding of how national economies operate and to allow a broader picture of how commerce operates (11).

A general first degree has been advocated before and is being considered again in Scotland and Commonwealth countries are turning towards it.(13). There is not universal acceptance of the present Honours degree system, considered by some to be "too big a step for most students not intending to specalise in a single subject and too small a step for those who are" (13). In USA specalisation is considered appropriate at postgraduate levels and this system may be an option that developing HE systems aught to consider.

FLEXIBLE, OPEN AND DISTANCE LEARNING

Having learned from our experiences in Scotland, certain assumptions can be made. The commitment to widening opportunities demands that universities and colleges be flexible in the education and training they provide and the courses they offer. This is because a very much larger proportion of the population now has to be accomodated in their educational needs and the diversity of student cohort brings with it diversity of abilities. Therefore, the entrance qualifications will vary as will the starting level of the courses. Similarly, diversity in needs will be apparent. Although the majority of students will be school leavers entering HE on a full time basis, more provision may now have to be made for part time students-in Scotland and the UK it has become a fact of life that many students have work and domestic commitments. Places for mature students (usually between 20-40 years old) have been increased in recognition of the fact that people of this age group either, faced with unemployment, have to retrain to participate in further work or, wish to train or learn for the first time (14).

'Access', an innovative step pioneered by Glasgow University, involves the 'bringing of the university' out into commmunties of the poorer areas of the city. Lecturers hold informal classes on subjects such as philosophy, literature, history and ecology to these disadvantaged groups.

Two other universities have followed suit. Access has now developed a stage further, offering out of term courses for school leavers or other students who wish to upgrade entrance qualifications thereby acting as a bridge to HE.

Once seen as a distraction to the commitment of full time study, the working student is now commonplace in Scotland and the UK, more so with the need to earn tuition fees and maintenance expenses. Many universities can offer advice on such matters but several Scottish cities have developed a stage further and specalise in student recruitment. The Student Employment Services initiated in Edinburgh are able to match students with jobs that require a maximum of 15 hours per week and find they have arranged employment for students in jobs primarily in the retail sector but also as diverse as film extras.The practical experience gained by the student helps to develop interpersonal skills, proving he can work in a team and can tolerate the varying paces of business. The arrangment can also be a two-way benefit. Not only does the student earn much needed money and gain insight into employment, the employers may take them on after graduation as much more can be observed about a person during their placement than from an interview (15).

1999 saw the 30th anniversary of the largest university in UK. The Open University was established in 1969 to pave the way towards degree courses on a part time basis and makes up 20% of all those studying HE part time in UK. It prides itself on its programme of "equal access and opportunity for all' and as such is open to all people regardless of circumstance. No qualifications are needed for admission to most courses except higher degrees. Open University teaching was traditionally based on television programmes supplemented by books, and learning and assessment by correspondence. Now learning material is available on audio and video cassettes, computer software and web sites and correspondence tuition can now be via electronic communication.

TECHNOLOGY AND LEARNING

The impact of the electronics industry has been immeasureable in terms of efficiency of data handling and sophistication of data management. It has advanced to almost unthinkable levels of capability which started with the discovery of the electron in the early years of the 20th century. Early consumer goods such as the radio and television were superceeded with the breakthrough of the transistor, a small semiconductor 'chip' which lent itself to mass production. The first computers built in 1950s cost vast sums of money and filled several rooms (16). Now businesses, banking and commerce as well as millions of home users have desk top computers which have hugely magnified our ability to analyse, store, communicate and disseminate data. In terms of communication the world has shrunk rapidly lending itself to the use of the phrase 'global village'. Via electronic mail (e-mail) the Encyclopaedia Britannica could be transmitted across the world in seconds. A new area clearly marked for growth is e-commerce, an electronic business platform for trading and purchasing on the Internet and used by public and private companies, and individuals.

Understandably HE sector has committed serious investment in IT and it would be envisaged that developing countries will do likewise. Traditionally it was associated with administration but has become steadily instilled in teaching and learning systems. Teachers can put learning material on the computer to be downloaded by the student when convenient, thus economising on the teachers time spent in the classroom. Now most institutions have banks of computers, word processors and printers for student use. Most, if not all, essays and other written presentations are computer processed. It adds potential to the presentations of the teacher's and students alike. Many institutions have set up their own intranet linking their departments, sometimes with those of other local colleges, to enable communication with staff and students. The internet is a highly powerful electronic tool with an estimated 10m users in the UK and another 10,000 worldwide new users signing on each day. E-mail helps to maintain links between staff and students, friends and acquaintances and particularly important for those living away from home wishing to maintain contact.

The latest advances in the electronic industry have introduced digital technology to improve telecommunications infrastructure. The result is a merger of information with communications and a highly improved method of image-processing. This leading-edge technology combined with existing computer-based ware affords fast access to multitudes of databases-documents, statements, facts and regulation can be downloaded at breathtaking speed and paves the way for new sophisticated applications.

The field of Art and Design has invested heavily in IT over the last few years. The largest school, he London Institute spread over 20 sites throughout London and with 26,000 students, has had IT investment high on the agenda for some time. It has spent several million pounds to improve communications between sites resulting in sharpened presentations of visual imagery. The investments are seen to be justified by the hightened enthusiasm and interest shown by the students and the expansion of their potential the improvements have created. To promote computer use the school developed a department specalising in the use of IT and looks forward in 2000 to the completion of a digital video disc for lessons on improving drawing skills (17).

With ability to make millons of calculations in seconds the digitalisation of old documents is set to help preserve the work of the foremost Scottish architects and designers. Storage of antique documents in Dundee University has been helped by a grant of £330,000 to commit 200 years' worth of Scottish architectural drawings and photographs onto digital form. These Digital Archives will remove the need for frequent physical handling of the ageing documents by students of many disciplines, which access them. In this way the original drawings are preserved while access to students is made easier (18).

The computer age has permeated teaching and learning, the ubiquitous computer now sits at work stations throughout universities and colleges, and with the amplification effect digital technology has, do these new technologies now put the issue of teaching in question?.

First referred to in the Dearing Report appointed to address specific problems in UK HE, there is now much use made of the word 'effectiveness' in describing the degrees of achievement in the process of learning. Interested in the issues, which could affect this 'effectiveness' my own personal observations and those of others, (19) are in agreement. When conducting an informal survey on what is important in learning, the overwhelming response from students was 'approachability of lecturers'. This ability to make personal contact was clearly emphasised as being a highly significant factor in the teacher and learner relationship. Reinforcing this was the popularity with students one recently retired professor of Life Sciences in Glasgow had enjoyed. He had possessed particular qualities; an understanding of the young, laced with an entertaining caustic humour, always encouraging minds to enquire while at the same time being helpful and-very importantly-had the ability to command respect. These coupled with several others-energy, integrity, vision -are what good lecturers should have, and even in the most diverse cross section of students should enable some learning to be achieved. However with the heterogeneities of human nature not all lecturers possess good lecturing qualities and, in the views of some, there should be a 'refreshing' move away from traditional didactic presentation (13). The effects of the information technology explosion will contribute greatly to the teaching and learning relationship of the future.

THE CORPORATE UNIVERSITY

One of the biggest disappointments some young people have to face is leaving home for advanced education (20) but plans are set in motion in Scotland which will help to change this. Occupying one of the more remote parts of Scotland, predominantly in the upper Northern and Western area, is the Highlands and Islands region. Incorporating vast areas of predominantly rough grassland, moors and mountains and out to the remote island groups of Orkney and Shetland, it covers an area of several thousand square miles and is inhabited by a relatively small number of people. A new type of university for the region had been proposed many years ago but more recently has become a likely reality, and is due largely to the perseverance of interested parties,the winning of substantial funds and advanced technology. Highlands and Islands Enterprise commissioned a report in which it was recommended that 13 partner campuses, most being existing local colleges or research centres througout the region, be electronically linked. A total of £95m are being invested in the construction of new buildings and the development of infrastructure capable of covering the vast geographical distances. The cost of the infrastructure has been shared by two mobile phone companies who want to expand coverage. The learning material will be in study packages on CD-ROMs with instructions for students and advice on relevant suggestions for data access via the Internet web sites. It is described as a more student-centralised course. Apart from it being a new conception for Scotland the agenda planned for UHI is revolutionary in the sense that it proposes to broaden the spectrum of knowledge it

teaches in the first few years of undergraduate study. In short, it is proposing the broad-based general degree described above (in curriculum development). Regarded as an 'evolutionary change' in HE, rather than the subject-based teaching associated with traditional and conventional Scottish universities, its aim is to adopt a teaching style which will be skills-based, valuing team-work and transdisciplinary studies with broad heterogenity of knowledge. "Young undergraduates desire a bigger picture, a context to involve and build their understanding" (13).

In more ways than one this corporate style of university is set to inject new life into the remote, rural areas of Scotland which otherwise would continue to witness annual emigration of its young to cities further south. Another point worth mentioning is the diversity in community lifestyle which may be rekindled in the country villages and towns which so often are depleted of their young adults. There must be many areas in developing countries which would benefit from a similar institution.

VIRTUAL EDUCATION

Those states wanting to provide their communities with wide affordable access to learning will look to the new technologies which have the potential for mass education. A recent report commissioned by the Department of International Development looks at the global perspective of virtual education in which ten regions in the world were identfied and the variation in this development across them described (21). The four separate sources involved in this mode of education included: (a) institutions traditionally involved in open and distance learning (b) traditional institutions which up till recently had not been involved in advanced technology education and were now using it to supplement campus-based teaching (c) large companies providing 'in-house' lectures to staff and training them to degree level, .eg British Aerospace, Ford and (d) virtual education in the purest sense -the 'virtual university' -based on the creation of partnerships offering courses and learning material which has been composed by other institutions, subseqently awarding their own credits and degrees by assessing students' prior learning of these materials. Examples are Regents College in New York and the University of Phoenix, among others described in the report. The University for Industry is planned to operate in UK in the near future.

While the new technologies provide a vehicle for bringing greater wealth of knowledge so complementing the teaching and learning process, it would be true to say that, taken in to the extreme in (d) above 'virtual university' draws the most criticism. Described as the 'university that does no teaching' it is this precise lack of face-to-face teaching which raises the issue of the need for personal contact. Younger students in particular benefit from this as they do not take to independent learning as quickly as older students. Put overtly from one young student recently "If you don't understand, there's no one to ask". Therefore personal contact, related to the 'approachability' quality, does not leave students on their own. Not only do they benefit from social interaction with the lecturer but also from collaboration with other students and the fundamental atmosphere of a lively classroom or lecture theatre.

As the report shows many countries are developing virtual modes of education and a large degree of variation exists. Some economically disadvantaged regions will find the cost prohibitive while individual learners will need access to appliances such as computers, telephones and television. Education policy makers will have to decide what mode will best suit particular regions but it is likely that the majority of scenarios which develop will a combination of old with new.

CONCLUSIONS

To suit new batches of learners year in and year out Higher Education has to evolve with time and education policy makers and managers must become masters of that change.They must have the ablity to look to the future to forecast what skills will be needed in the workforce and work in advance setting the wheels of change in motion. Wherever possible curricula should have practical experience built in as such graduates are likely to be realistically more useful and adaptable than those restricted to theory. This will stand the student in good stead for employment at home or abroad.

Education providers have a duty to contribute to civic virtue, to diseminate knowledge and wisdom. They must aim to bring equality of access to learning. They must encourage the state to fund installation of infrastructure and the new technologies needed to bring education out to wider communitites, the capital cost of which would far exceed the budget of most institutions. It must not be overlooked that the majority of students are young people in their late teens and its unlikely that they all have a clear view of what they want to study. Advising them on ideas for their future should have started at home or in primary schools and this reinforces the need to bring knowledge further afield than HE institutions. On this wider scale the adequate distribution of knowledge through newspapers and home appliances will surely be a significant move towards social, cultural and economic improvement. On a personal level it will enable future students to discuss possibilities with the people that are closest to them avoiding rash decisions which they may later regret. If their home has been unable to advise them, HE institutions must make it their responsibility to recognise this and ensure that mentors, coming in contact with young students for the first time, have the social skills and undertanding to handle apprehension about what the future holds.

An open mind must be maintained in the field of research. The spectrum performed should be composed of several equally important elements-that which is likely to lead to economic wealth and that which is original and innovative. The world is now witnessing a shift in environmental consciousness. 30 years ago the environment had no value attached to it, now it is regarded as priceless. Consequently the strive towards commercial and materialistic gain should have underlying environmental soundness. Remaining on the environmental issue there are various challenges facing the world, not least of all is global warming in which it is predicted the harvests in hotter countries may suffer the greatest. Developing countries in particular need to

investigate sustainable programmes and to invest in systems which conserve the valuable assets of soil and water. Countries which can afford such investment in productive research and development aught to engage in it sooner rather than later because it may enable them to become not only more self sufficient but in a position to help countries less fortunate than themselves when the extremes of climate go against them.

Regardless of our involvement with new technologies we are all dependent on the natural world for survival and it is the responsibility of education policy makers to ensure that our future generations develop a quality of life which makes sense in economic and ecologic terms.

ACKNOWLEDGEMENT

The author wishes to acknowledge the research assistance given by Dr.Elizabeth Hall in preparing this paper.

REFERENCES

- Ronald Crawford, (1997). Ch.1, in *A Future for Scottish Higher Education.* (ed) R.Crawford. COSHEP
- John Arburthnott, (1997). Ch 2, in *A Future for Scottish Higher Education.* (ed) R.Crawford. COSHEP
- Talib Younis, (1990). "The Changing Nature of Higher Education: Current Issues in Managing The Responsive College". *Management Education and Development ;* vol 21 part 2, p111-121
- Karen MacGregor, (Aug 20th 1999). *Times Higher Educational Supplement.* p26
- Andrew Miller, (1997). Ch 3, in *A Future for Scottish Higher Education.* (ed) R.Crawford. COSHEP
- David Horrobin, (9th Nov 1996). *Peer review of grant applications. Lancet.* p1239
- Susan Greenfield, (16th Feb 1997). "When peers hold the purse strings". *Independent on Sunday Review* p42
- *The Guardian* , Home News 29th Mar, 1996 p8
- Stephanie Pain, (27th Feb1997). "When the price is wrong". *The Guardian Section 2 online* p2
- *Times Higher Educational Supplment.* Aug 13th, 1999.
- John McClelland, (1997). Ch11, in *A Future for Scottish Higher Education.* (ed) R.Crawford. COSHEP, 1997
- John Lavar, (1997). Ch 12, in *A Future for Scottish Higher Education.* (ed) R.Crawford. COSHEP
- Graham Hill, (1997). Ch 7, in *A Future for Scottish Higher Education.* (ed) R.Crawford. COSHEP

- Stewart Sutherland, (1997). Ch 2, in *A Future for Scottish Higher Education.* (ed) R.Crawford. COSHEP
- *The Glasgow Herald*, Scottish Graduate Fair (supplement) 12th Oct 1999 p7
- *Gaia Atlas of Planet Management.* (ed) Norman Myers.Pan Books 1985
- Kam Patel, (Aug 27th 1999). *Times Higher Educational Supplement.*, p6
- *The Universities We Need.* Nigel Blake, Richard Smith, Paul Standish. Kogan Page, London 1998
- Ben Russell, (16th Sept. 1998). "Big Business Threatens Old Universities". *The Independent*
- Glen Farrell. *The Development of Virtual Education: A global perspective.* ISBN.1. 895369 746 www.col.org/virtualed